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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 46849.3-2025

**Technical product documentation - Requirements for model
based definition - Part 3: Design data**

技术产品文件 基于模型定义要求 第3部分：设计数据

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. This document is Part 3 of GB/T 46849 "Technical Product Documentation Requirements Based on Model Definition". GB/T 46849 has been published. The following parts were included.

1.General Provisions;

---Part 2.3D Annotation;

5.Detection Data;

7.Data Organization;

8.Data Inspection;

9.Data Release. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Technical Product Documentation (SAC/TC146). This document was drafted by: CRRC Qishuyan Locomotive Co., Ltd., the 38th Research Institute of China Electronics Technology Group Corporation, and Hangzhou Xindi Digital Technology Co., Ltd. Digital Engineering Systems Co., Ltd., Nanjing Qijun Software Co., Ltd., Beijing Aerospace Systems Engineering Research Institute, CRRC Dalian Locomotive & Rolling Stock Co., Ltd. China Aero Engine Corporation Xi'an Power Control Technology Co., Ltd., CRRC Zhuzhou Electric Locomotive Co., Ltd., Shandong University Huatian Software Co., Ltd. Wanxiang Qianchao Co., Ltd., SAIC-GM-Wuling Automobile Co., Ltd., the 5719th Factory of the Chinese People's Liberation Army, and China Machinery Production Corporation. Power Promotion Center Co., Ltd., and China Machinery Research Institute of

Standards and Technology (Beijing) Co., Ltd. The main drafters of this document are. Gao Kewei, Liu Jianhua, Zhang Hongqi, Zhang Xiangxiang, Peng Wei, Chen Zhiyang, Shao Xiaodong, Pi Zan, Zhang Lichen, and Wang Yu. Ruan Siwei, He Yantian, Shi Bomei, Li Junping, Xiao Jiulin, Pan Kanghua, Gao Hongwei.

With the gradual application and promotion of 3D computer-aided design (CAD) technology, and the application of model-defined design (MBD) technology in manufacturing... Within enterprises, the development models and processes for mechanical products have undergone significant changes; three-dimensional digital models have replaced two-dimensional drawings. Gradually becoming the sole basis for product development represents a tremendous transformation in terms of technology, management, and mindset. To adapt to this change, systematically address the bottlenecks in product 3D design and manufacturing, and promote the popularization of model-based definition technology... Engineering applications support the digital transformation and upgrading of my country's manufacturing industry, and have led to the formulation of GB/T 46849 "Technical Product Documentation Based on Model Definition". The requirements are as follows: GB/T 46849 is based on the definition and application process of the three-dimensional model of the entire product life cycle, and is proposed to consist of 9 parts.

1.General Provisions. The purpose is to define the general, detailed, and management requirements based on the model definition, serving as a framework for the entire system. The foundation and framework of the standards.

---Part 2.3D Annotation. The purpose is to define the classification and composition of 3D annotation, and its application in 3D digital models of products. General and detailed requirements for 3D annotation are provided to ensure that the annotation information is clear, complete, and understandable.

3.Design Data. The purpose is to define the classification and composition of design data based on the model definition, and to define the design data definition... General and detailed requirements for design and management are required to ensure the accuracy and sufficiency of design data as the sole data source.

4.Process Data. The purpose is to define the classification and composition of model-based process data, as well as the definition of process data. General and detailed requirements for management and control are established to ensure effective coordination between process design and manufacturing processes.

5.Detection Data. The purpose is to define the classification and composition of detection data based on the model definition, and its relationship with the geometric model. The requirements, as well as the general and detailed requirements for the definition and management of test data, ensure the accurate implementation of quality control.

1 Scope

GB/T 46849.3-2025 is the Chinese national standard covering what the design side of a model based definition must contain - the geometry and its accuracy, the annotations and attributes, the materials and finishes, and the completeness required before the model can replace a drawing. Part 3 of the series, first edition, 17,000 words, with Parts 2, 4 and 7. It was issued on 31 December 2025 and has been in force since 1 April 2026, as a first edition. The document is under the responsibility of the Standardization Administration of China. This page is published from the official record of the 2025 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document specifies the classification and composition of design data based on model definition, as well as the general requirements and details for design data definition and management. Detailed requirements. This document applies to the definition and management of design data based on model definitions.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 17451-1998 Technical Drawing Drawing Methods and Views

GB/T 17452-1998 Technical Drawing Methods. Sectional Views and Cross-sectional Views

GB/T 24734.1-2009 Technical Product Documentation - Digital Product Definition Data - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 24734.1-2009 and GB/T 46849.1-2025 apply to this document.

4. Classification of Design Data Design data can be divided into four categories. geometric information, constraint information, engineering attributes, and management information.

4 Engineering Drawings of Model Projection

GB/T 46849.1-2025 Technical Product Documentation - Requirements Based on Model Definition - Part

5 Composition of Design Data

5.1 The design data mainly consists of model geometry and auxiliary geometry in the geometric information, and dimensional constraints, tolerance constraints, and datum constraints in the constraint information. Manufacturing constraints, geometric constraints, expression constraints, assembly constraints, basic attribute information, material property information, and technical requirement information in engineering properties. The information consists of hierarchical structure information, coloring and rendering information, template information, and version, design time, approval process, and change records in the management information. The details are shown in Table 1.

8 Model Numerical and Dimensional Requirements

GB/T 26099.4-2010 General Rules for 3D Modeling of Mechanical Products Part